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(54) 【発明の名称】 接続部材

(57) 【要約】

【課題】 作業誤差によるショート抑制に優れた接続部材を提供する。

【解決手段】 一定のピッチで端子が並列に並べられた部分を有する基板と異方導電性接着剤で接続するための接続部材であって、絶縁基材と導体からなり、基板の端子と接続される箇所、その幅の1/3以下の厚さの導体を有する接続部材。

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【特許請求の範囲】

【請求項1】一定のピッチで端子が並列に並べられた部分を有する基板と異方導電性接着剤で接続するための接続部材であって、絶縁基材と導体からなり、基板の端子と接続される箇所に、その幅の1/3以下の厚さの導体を有することを特徴とする接続部材。

【請求項2】導体の幅が、0.02～1mmの範囲であることを特徴とする請求項1に記載の接続部材。

【請求項3】ピッチが一定の部分の端子間のピッチが0.02～2mmの範囲であることを特徴とする請求項1または2に記載の接続部材。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、接続部材、特に基板と接続するための接続部材に関する。

【0002】

【従来の技術】従来、基板と基板の接続は、コネクタとケーブルやジャンパー線などで行っていた。ところが、電子機器の発達に伴い、コネクタを取り付ける箇所が小さくなり、またコネクタに費やす経費の節減をしなければならぬなど、小型・薄型で低価格の機器が求められるようになり、またジャンパー線ですらも、接続する箇所を切りつめられているのが実状である。

【0003】さらに、液晶表示装置などの精細な電極パターンを有する基板への接続が必要になり、そのような精細な電極パターンに合わせた端子パターンを有する基板と、異方性導電接着剤を用いて接続する方法が開発されている。

【0004】ところで、このような接続において、接続する基板と液晶基板との熱膨張率が異なり、あるいはまた、基板と液晶基板とを重ねて装着しなければならないこともあり、基板と液晶基板との接続には、フレキシブルな基材に接続の端子パターンを形成したものを使用していることが多く、熱膨張率の異なる3種の基材を組み合わせなければならないような場合もある。

【0005】このような場合に、基板と接続部材とを貼り合わせるときに、加熱しながら位置合わせを行い、接続部材を伸ばしながら接続を行うことが提案されている。

【0006】

【発明が解決しようとする課題】ところが、接続する基板の端子が一行に一定の間隔で並んでいれば、基板と接続部材とを貼り合わせるときに、加熱しながら位置合わせを行い、接続部材を伸ばしながら接続を行うことが、熱膨張率の異なる基材どうしを貼り合わせるのに有効であったが、端子の数が多く、わずかの作業誤差で、隣接する端子間がショートするという課題がある。

【0007】本発明は、作業誤差によるショートの抑制に優れた接続部材を提供することを目的とする。

【0008】

【課題を解決するための手段】本発明の接続部材は、一定のピッチで端子が並列に並べられた部分を有する基板と異方導電性接着剤で接続するための接続部材であって、絶縁基材と導体からなり、基板の端子と接続される箇所に、その幅の1/3以下の厚さの導体を有することを特徴とする。

【0009】導体の幅は、0.02～1mmの範囲であることが好ましい。

【0010】ピッチが一定の部分の端子間のピッチは0.02～2mmの範囲であることが好ましい。

【0011】

【発明の実施の形態】本発明において、基板には、液晶のセルを形成したガラス基板やその他のプリント配線板、フリップチップやフラットパッケージなどの半導体パッケージを用いることができる。

【0012】導体の幅が、0.02mm未満であると、通常の配線板においてエッチング加工する方法を用いることができず経済的でなく、1mmを越えると、加熱して接続部材を伸ばさなくても効率よく接続を行うことができるので、0.02～1mmの範囲であることが好ましく、さらには0.03～0.1mmの範囲がより好ましい。また、ピッチが一定の部分の端子間のピッチは、0.02mm未満であると、通常の配線板においてエッチング加工する方法を用いることができず経済的でなく、2mmを越えると、加熱して接続部材を伸ばさなくても効率よく接続を行うことができるので、0.02～2mmの範囲であることが好ましく、より好ましくは、0.04～0.2mmの範囲である。

【0013】本発明の接続部材には、端子が導体であり、その導体とその導体を支える絶縁基材とからなることが好ましく、具体的には、導体には、金属箔、特に銅箔やアルミニウム箔などの通常のプリント配線板に用いるものが、導体の形成を行うのに適しており、絶縁基材には、フレキシブルな絶縁材料であることが好ましく、たとえば、厚さが0.2mm以下のガラス布エポキシ樹脂含浸基材、ポリエステルフィルム、ポリイミドフィルムなどがあり、中でもガラス布エポキシ樹脂含浸基材とポリエステルフィルムが、可搬性、加工性に優れ、好ましい。このほかにも、加熱して熱膨張率の異なる基材の違いによる端子の位置合わせの調整を行うには、接続部材の基材の熱膨張率が均一であるものがより好ましく、上記のほかにも、絶縁被覆された金属板なども使用できる。

【0014】

【実施例】厚さ18μmの銅箔をガラス布エポキシ樹脂基材の片面に貼り合わせた、厚さ0.2mmの銅張り積層板であるMCL-E-679（日立化成工業株式会社製、商品名）に、エッチングレジスト用ドライフィルムであるHN-920（日立化成工業株式会社製、商品名）を、ラミネートし、0.06mmピッチで平行に並

(3)

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べた幅0.03mmの端子パターンの形状に光を透過するフォトリソマスクを重ねて、紫外線を照射し、現像して、エッチングレジストを形成し、そのエッチングレジストに覆われていない銅箔の不要な箇所をエッチング除去して端子パターンを形成したプリント配線板を作製した。厚さ18 μ mの銅箔をガラス布エポキシ樹脂基材の片面に貼り合わせた、厚さ0.2mmの銅張り積層板であるMCL-E-679（日立化成工業株式会社製、商品名）の銅箔を、化学エッチング液をスプレー噴霧して、厚さ10 μ mまで薄くしたものに、エッチングレジスト

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し、現像して、エッチングレジストを形成し、そのエッチングレジストに覆われていない銅箔の不要な箇所をエッチング除去して端子パターンを形成し、接続部材を作製した。この接続部材の端子パターンの上に、幅1.2mmの異方性導電接着剤フィルムであるAC-7244（日立化成工業株式会社性、商品名）をラミネートし、最初に作製したプリント配線板と位置合わせし、170℃で2MPa、10秒の条件で加熱・加圧して、接着した。このようにして100枚の接続を行ったが、1枚も接続不良はなかった。

【0015】

【発明の効果】以上に説明したとおり、本発明によって、作業誤差によるショート抑制に優れた接続部材を提供することができる。

フロントページの続き

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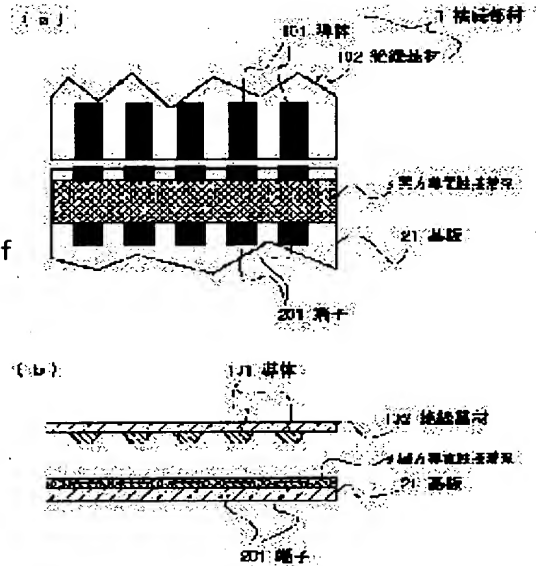
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(54) CONNECTION MEMBER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a connection member for excellently suppressing short-circuiting due to work errors.

SOLUTION: This connection member 1 for connecting a substrate 21 provided with a part where terminals 201 are parallelly arranged with a fixed pitch by an anisotropic conductive adhesive material 3 is composed of an insulation base material 102 and a conductor 101. In this case, on the part to be connected to the terminal 201 of the substrate 21, the conductor 101 of a width less than 1/3 of the width of the terminal 201 of the substrate 21 is provided. It is desirable that the pitch between the terminals at the part of a fixed pitch is in the range of 0.02-2 mm.



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CLAIMS

[Claim(s)]

[Claim 1] Connection material to which width of face of a conductor is characterized by having a conductor of $1/3$ or less width of face of terminal width of face of a substrate in respect of not being in contact with an insulating base material in a place which is the connection material for connecting with a substrate which has a portion with which a terminal was compared by juxtaposition in a fixed pitch with different direction electroconductive glue, consists of an insulating base material and a conductor, and is connected with a terminal of a substrate.

[Claim 2] Connection material according to claim 1 or 2 characterized by being the range whose pitch between terminals of a portion with a fixed pitch is 0.02-2mm.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the connection material for connecting with connection material, especially a substrate.

[0002]

[Description of the Prior Art] Conventionally, connection of a substrate and a substrate was made with the connector, the cable, the jumper, etc. However, the actual condition can be reducing the part which the part in which a connector is attached becomes small with development of electronic equipment, comes to ask for the device of a low price with small and a thin shape -- cost spent on a connector must be reduced -- and is connected even with a jumper.

[0003] Furthermore, connection with the substrate which has minute electrode patterns, such as a liquid crystal display, is needed, and the method of connecting with the substrate which has the terminal pattern aligned with such a minute electrode pattern using anisotropy electric conduction adhesives is developed.

[0004] By the way, in such connection, the coefficient of thermal expansion of the substrate and liquid crystal substrate to connect differs, or since it must equip with a substrate and a liquid crystal substrate in piles again, what formed the terminal pattern of connection with a flexible base material in connection between a substrate and a liquid crystal substrate is used in many cases, and also when three sorts of base materials with which coefficient of thermal expansion differs must be combined, it is.

[0005] In such a case, when sticking a substrate and connection material, alignment is performed heating and connecting lengthening connection material is proposed.

[0006]

[Problem(s) to be Solved by the Invention] However, although it was effective in sticking the base materials from which coefficient of thermal expansion differs to connect performing alignment, heating and lengthening connection material when the terminal of the substrate to connect was located in a line with the single tier at the fixed gap, and sticking a substrate and connection material, the technical problem that there are many terminals and between the terminals which adjoin with few activity errors of lamination short-circuits occurs.

[0007] This invention aims at offering the connection material excellent in the short control by the activity error.

[0008]

[Means for Solving the Problem] The substrate 21 which has a portion with which a terminal 201 was compared by juxtaposition in a fixed pitch as connection material of this invention is shown in drawing 1 (a). As it is the connection material 1 for connecting with the different direction electroconductive glue 3, it consists of an insulating base material 102 and a conductor 101 and it is shown in a place connected with the terminal 201 of a substrate 21 at drawing 1 (b) Width of face of a conductor 101 is characterized by having the conductor 101 of 1/3 or less width of face of terminal width of face of a substrate 21 in respect of not being in contact with the insulating base material 102.

[0009] As for a pitch between terminals of a portion with a fixed pitch, it is desirable that it is the range of 0.02-2mm.

[0010]

[Embodiment of the Invention] In this invention, the semiconductor packages in which the cel of liquid crystal was formed, such as a glass substrate, other printed wired boards, a flip chip, and a flat package, can be used for a substrate.

[0011] Since it is efficiently connectable even if it heats and does not lengthen connection material if the pitch between the terminals of a portion with this fixed pitch cannot use the method of carrying out etching processing to it being less than 0.02mm in the usual patchboard, and is not economical and 2mm is exceeded, it is desirable that it is the range of 0.02–2mm, and the range of it is 0.04–0.2mm more preferably.

[0012] It is desirable that a terminal becomes the connection material of this invention from the insulating base material which is a conductor and supports the conductor and its conductor. Specifically Are suitable for what is used for the usual printed wired boards, such as a metallic foil especially copper foil, and aluminium foil, forming a conductor in a conductor. To an insulating base material It is desirable that it is a flexible insulating material. Thickness A glass fabric epoxy resin impregnation base material 0.2mm or less, There are polyester film, a polyimide film, etc., and especially, a glass fabric epoxy resin impregnation base material and polyester film are excellent in portability and processability, and desirable. In addition, in order to adjust alignment of the terminal by the difference in the base material with which it heats and coefficient of thermal expansion differs, what has a uniform coefficient of thermal expansion of the insulating base material of connection material is more desirable, and can use the metal plate by which pre-insulation was carried out besides the above.

[0013]

[Example] Stuck copper foil with a thickness of 18 micrometers on one side of a glass fabric epoxy resin base material. MCL-E -679 (the Hitachi Chemical Co., Ltd. make --) which is a copper-clad laminate with a thickness of 0.2mm HN-920 (the Hitachi Chemical Co., Ltd. make --) which is a dry film for etching resist at a trade name Laminate a trade name, and in the configuration of the terminal 201 with a width of face of 0.03mm put in order in parallel in 0.06mm pitch, in piles, irradiate ultraviolet rays and the photo mask which penetrates light is developed. The printed wired board which formed etching resist, carried out etching removal of the unnecessary part of the copper foil which is not covered with the etching resist, and formed the terminal 201 was produced as a substrate 21. Stuck copper foil with a thickness of 18 micrometers on one side of the glass fabric epoxy resin base material which is the insulating base material 102. MCL-E -679 (the Hitachi Chemical Co., Ltd. make --) which is a copper-clad laminate with a thickness of 0.2mm HN-920 (the Hitachi Chemical Co., Ltd. make --) which is a dry film for etching resist at a trade name Laminate a trade name, and in the configuration of the conductor 101 with a width of face of 0.01mm put in order in parallel in 0.06mm pitch, in piles, irradiate ultraviolet rays and the photo mask which penetrates light is developed. Etching resist was formed, etching removal of the unnecessary part of the copper foil which is not covered with the etching resist was carried out, and the connection material 1 in which the conductor 101 was formed was produced. At this time, the amount of etching is calculated experimentally beforehand, and the spray pressure of an etching reagent and etching time were controlled so that the conductor width of the part which touches the insulating base material 102 was set to 0.03mm. On the conductor 101 of this connection material 1, AC-7244 (the Hitachi Chemical Co., Ltd. nature, trade name) which is the different direction electroconductive glue 3 of the shape of a film with a width of face of 1.2mm was laminated, and alignment of the printed wired board produced first was carried out, and at 170 degrees C, it heated and pressurized and pasted up by 2MPa(s) and the conditions for 10 seconds. Thus, although connection of 100 sheets was made, the faulty connection did not have one sheet, either.

[0014]

[Effect of the Invention] The connection material which was excellent in the short control by the activity error with this invention can be offered as explained above.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] (a) is the plan showing one example of this invention, and (b) is the cross section.

[Description of Notations]

1. Connection Material 101. -- Conductor

102. Insulating Base Material 21. Substrate

201. Terminal 3. Different Direction Electroconductive Glue

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